Probability & Statistics

SYLLABUS **PVP-23**

Course Code	**23BS1402**	**Year**	II	**Semester**	II
Course Category	Basic Science	**Branch**	**IT**	**Course Type**	Theory
Credits	3	**L-T-P**	3-0-0	**Prerequisites**	Basic concepts of probability
Continuous Internal Evaluation	30	**Semester End Evaluation**	70	**Total Marks**	100

Course Outcomes

Upon successful completion of the course the student will be able to

CO1	**Understand** the basic concepts of probability and statistics(L2).
CO2	**Calculate** the measures of central tendencies, correlation and regression to the given data and apply appropriate probability distributions to the given problem (L3).
CO3	**Apply** the concepts of testing hypothesis for large and small samples(L3).
CO4	**Analyze** the concepts of probability, correlation and regression to real life problems(L4).
CO5	**Analyze** the given data and identify appropriate test statistic to test given hypothesis for statistical decision(L4).

Contribution of Course Outcomes towards achievement of Program Outcomes& Strength of correlations (3:High, 2: Medium, 1:Low)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2											
CO2	3											
CO3	3											
CO4		3										
CO5		3										

Syllabus

Unit No.	Syllabus	Mapped CO's
1	**Measures of Central Tendency and Probability:** **Measures of central tendency**: Mean, Median, Mode **Probability**: Probability axioms, addition law and multiplicative law of probability, conditional probability, Baye's theorem (without proof).	CO1,CO2, CO4
2	**Random Variables and Probability Distributions:** Random variables (discrete and continuous), probability density function, probability distribution-Binomial, Poisson and normal distribution-their Properties(without proof), mathematical expectation and variance.	CO1,CO2, CO4
3	**Correlation, Regression:** Correlation, correlation coefficient, rank correlation, regression, lines of regression, regression coefficients, principle of least squares and curve fitting (straight Line, parabola and exponential curves).	CO1,CO2, CO4
4	**Testing of Hypothesis and Large Sample Tests:** Formulation of null hypothesis, alternative hypothesis, the critical region, two types of errors, level of significance. **Large Sample Tests**: Test for single proportion, Difference of proportions, test for single mean and difference of means. Confidence interval for parameters in one sample and two sample problems	CO1,CO3, CO5
5	**Small Sample Tests:** Student t-distribution(test for single mean, two means and paired t-test), testing of equality of variances (F-test),χ2-test for goodness of fit, χ2- test for independence of attributes.	CO1,CO3, CO5

Learning Resources
Text Books
1. S.C.Gupta and V.K.Kapoor, Fundamentals of Mathematical Statistics, 11/e, Sultan Chand & Sons Publications, 2012. 2. Miller and Freunds, Probability and Statistics for Engineers,7/e,Pearson,2008
Reference Books
1. S. Ross, A First Course in Probability, Pearson Education India,2002. 2. Dr.T.K.V. Iyengar, Dr. B. Krishna Gandhi, S. Ranganatham, Dr.M.V.S.S.N. Prasad, Probability& Statistics, Publications: S. Chand, 4th Revised Edition, 2012.
e-Resources & other digital material
1. https://nptel.ac.in/courses/111/106/111106150/ 2. https://nptel.ac.in/courses/111105035 3. https://onlinecourses.nptel.ac.in/noc22_mg31/preview 4. PVPSIT FED- Moodle